The Development of Peer-led Anatomy Review Sessions for USMLE Step 1 Examination Preparation

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East Carolina University MET SCHOLARS MEDICAL EDUCATION AND TEACHING

RATIONALE/NEED

- USMLE Step 1 scores are one of the most important factors considered by residency programs.
- Currently, the Brody School of Medicine (BSOM) only has one Step 1 preparatory program, Aim Higher, which is a peer-led program that focuses on answering board-style practice questions.
- While BSOM students have historically scored at or above the national Step 1 average, discipline-specific data revealed that the same students consistently performed below the national average in the area of Gross Anatomy and Embryology (GAE).
- This below-average performance may be attributed to the time lapse between when medical students complete GAE in the fall of their first year and when they take the USMLE Step 1 examination in the spring of their second year.

METHODS

A two-hour peer-led gross anatomy laboratory review session was offered to all current second-year students. Based on interest, four review sessions were held, each limited to eight students (n=29). The reviews focused on high-yield clinical anatomy of the upper and lower limbs, and were structured as follows:

- 10 question pre-session assessment (15 minutes)
- Interactive chalk-talk on the brachial plexus and its associated nerve lesions (15 minutes)
- Laboratory Stations (75 minutes)
  - Identifying nerve lesions and their clinical presentations using a prosected specimen
  - Reviewing osteology, high-yield fractures, and their associated nerve lesions
  - Comparing normal radiologic images (Plain film and CT images) to images of common abnormal pathologies
  - Using prosected joints to review ligaments, and special diagnostic tests
- 10 question post-session assessment (15 minutes)

The pre- and post-session assessments consisted of 10 multiple-choice, board-style examination questions. Participants were also asked to complete a qualitative survey to assess learner perceptions of the review.

RESULTS

A 10-year old girl fell on to an outstretched hand while roller-skating. Physical exam shows weakness with abduction and adduction of the digits, opposition of the 5th digit, and adduction of the thumb. The patient is still able to make a fist, but has difficulty extending digits 4 and 5 completely. There is reduced sensation and tenderness to palpation over the medial aspect of the palm. Injury to which carpal bone is most likely responsible for her symptoms?

a. Fracture of the scaphoid
b. Dislocation of the lunate
c. Avascular necrosis of the scaphoid
d. Fracture of the trapezium
e. Fracture of the hook of the hamate

Figure 1. Example of a pre-/post session question. Clinical board-style questions were used to assess learner knowledge before and after the review session.

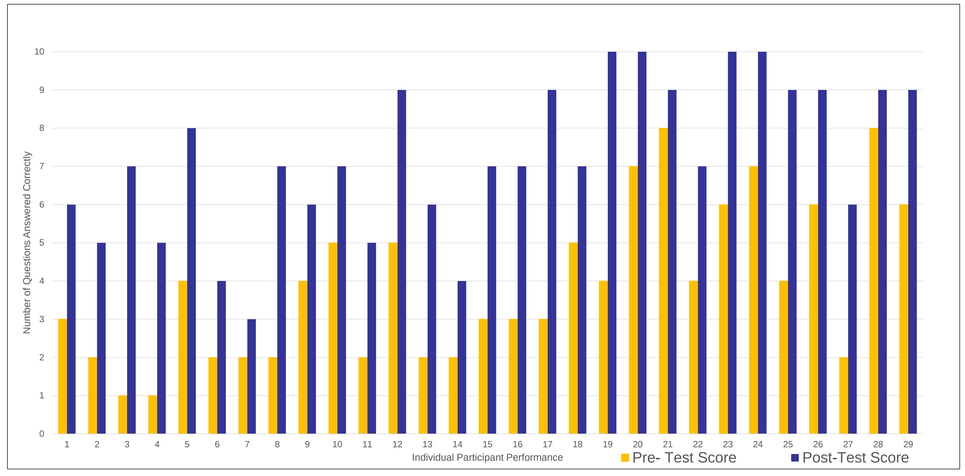

Figure 2. Learner performance on pre- and post-session knowledge assessment. Individual pre- and post-session scores plotted. Note increase in each participant's score. Pre- average: 3.90 ± 2.06 Post- average: 7.24 ± 2.01*. * p<0.01.

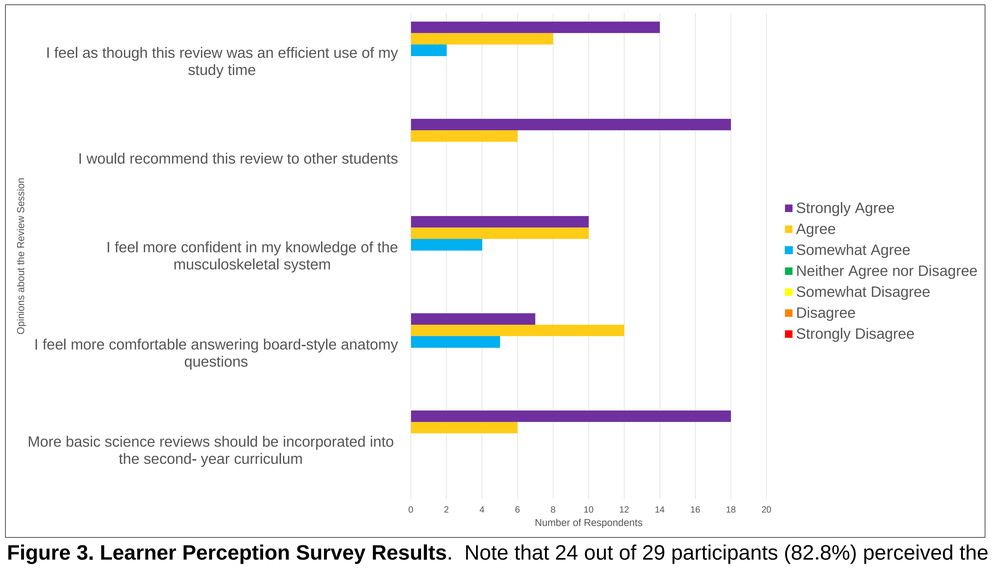

Figure 3. Learner Perception Survey Results. Note that 24 out of 29 participants (82.8%) perceived the review session in a positive light, citing improved confidence in content and ability to answer anatomy-based board-type questions, as well as viewing the session as an efficient use of study time.

"What did you like about the review?

"What did you dislike about the review?

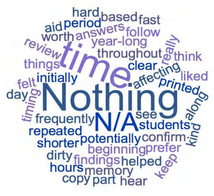

Figure 4. Learner feedback themes. Word cloud representation of session strengths and weaknesses.

LESSONS LEARNED

- After the review students felt more comfortable and confident answering board-style exam questions on the musculoskeletal system.
- Student performance on a 10- question assessment improved an average of 33.4%.

EVALUATION AND FUTURE DIRECTIONS

- To determine the impact of these review sessions on Step 1 performance, the differences between a student's actual and predicted USMLE Step 1 scores will be measured using a pre-existing score predicting algorithm.
- Each participant will be paired with a matched- control non-participant to control for the impact of other factors, such as pre-clinical grades and shelf-exam scores, on a student's Step 1 score.
- Learner feedback from this pilot-study will be assessed for major themes, and curricular adjustments will be made as needed.
- Review sessions will be offered to the next cohort of second-year medical students starting early in 2019.
- If implementation of structured anatomy reviews shows a significant impact on Step 1 scores and medical student knowledge, it could pave the way for additional structured basic science review sessions being integrated into the second-year curriculum.

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